

CLAIMS

1. A sputtering target comprising indium oxide and cerium oxide,
wherein when its crystal peaks are observed by X-ray diffraction, the presence of peaks originating from indium oxide and cerium oxide is observed, and
further when EPMA measurement is performed, the measured diameter of particles of cerium oxide dispersed in indium oxide is 5 μm or less.

2. The sputtering target according to claim 1, wherein
when the EPMA measurement is performed, the presence of the cerium oxide particles, which are cerium oxide particles, dispersed in indium oxide and having a diameter of 1 μm or more is observed.

3. The sputtering target according to claim 1 or 2, comprising indium oxide and cerium oxide, wherein $[\text{Ce}] / ([\text{In}] + [\text{Ce}]) = 0.005$ to 0.15 wherein $[\text{Ce}]$ represents the number of the atoms of cerium per unit weight/unit mass, and $[\text{In}]$ represents the number of the atoms of indium per unit weight/unit mass.

4. The sputtering target according to any one of claims 1 to 3, comprising indium oxide and cerium oxide, and having a density of 6.6 or more and a bulk resistance of 1 $\text{m}\Omega\text{cm}$

or less.

5. The sputtering target according to any one of claims 1 to 4, comprising indium oxide and cerium oxide, and comprising cerium oxide the valence of which is positive trivalent.

6. A transparent electroconductive film formed by sputtering using the sputtering target according to any one of claims 1 to 5, the specific resistance of the film being less than $600 \mu\Omega\text{cm}$.

7. The transparent electroconductive film according to claim 6, which is heated in a temperature range of 200 to 250°C , so as to be crystallized.

8. The transparent electroconductive film according to any one of claims 6 to 7, wherein the standard electrode potential to Ag/AgCl is 0.6 V or less.

9. A process for producing a transparent electroconductive film by use of the sputtering target according to any one of claims 1 to 5,

comprising the step of using the sputtering target according to any one of claims 1 to 5 to form the transparent electroconductive film by sputtering, and

the step of heating the formed transparent electroconductive film in a temperature range of 200 to 250°C , thereby crystallizing the film.